

Technical Data Sheet

Bridge Identification:	1110570000000B01 1110570000000B02
Facility Carried:	US 31
Feature Intersected:	St. Joseph River
Location:	Niles Township
County:	Berrien
Region:	Southwest
Year Built:	1984
Year Reconstructed:	N/A
Bridge Type:	Welded Plate Girder
No. of Spans:	5 S.B., 6 N.B.
Deck Area:	62,885 S.F. (S.B.) 72,445 S.F. (N.B.)
Paint System:	Type 3 (Fascias Type 4)
Paint Area:	180,500 S.F. (S.B.) 201,000 S.F. (N.B.)



Plan View Looking North (1)

Fracture Critical Members
<ol style="list-style-type: none"> 1. Brackets 2. Tension Areas of Main Girders

Fatigue Sensitive Details
<ol style="list-style-type: none"> 1. Transverse and Longitudinal Stiffener Welds 2. Flange and Web Splices 3. Small Web Gaps at Stiffeners

General Bridge Description

Bridge B01 of 11057 is a five-span continuous welded plate girder bridge carrying U.S. Route 31 (S.B.) over the St. Joseph River in Niles township in Berrien County. Bridge B02 of 11057 is a six-span continuous welded plate girder bridge carrying U.S. Route 31 (N.B.) in the same location. The span lengths vary. The span lengths for B01 are 208'-4", 297'-10", 297'-10", 297'-10" and 208'-3" measured from south to north. The overall length of B01 is 1,310'-1". The span lengths for B02 are 203'-11", 205'-7", 297'-2", 297'-2", 297'-4", and 208'-1" measured from south to north. The overall length of B02 is 1,509'-3". The out-to-out width of the deck is 48'-0" for both bridges, providing for two 12'-0" travel lanes and one 12'-0" and one 8'-0" shoulder. The bridges are supported by reinforced concrete abutments and piers. There are both hammerhead and rigid frame piers at these bridges.

The superstructure of these two bridges is unusual. There are three main girders with a "sub-stringer" system. The main girders have bearings at each substructure unit. The deck is supported by each main girder. However, the spacing between the main girders is so wide that the deck must also be supported in between each main girder and also in the overhang. The extra deck support members are called sub-stringers. The interior sub-stringers, which run longitudinally between the girders, are supported at each diaphragm. The exterior sub-stringers, which are the longitudinal sub-stringers supporting the deck overhang, are supported by brackets cantilevered from the main girders. The brackets and the diaphragms do not frame into the girder at the same location because the bracket connection would interfere with the diaphragm connection. Consequently, the brackets are located adjacent to each diaphragm. The brackets are not continuous across the entire deck, but terminate at the interior sub-stringers. (See sketch of cross section.)

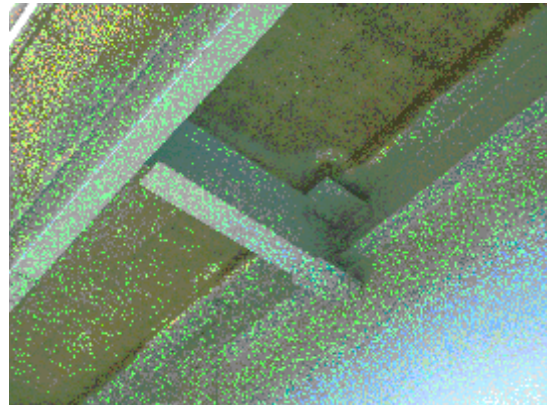
The bridges were built in 1984. The superstructures were painted in 1984 during construction.

Inspection Checklists

For additional information and detailed inspection procedures, refer to the Inspection and Maintenance Program section of this manual.

Fracture Critical Members/Fatigue Sensitive Details

- ! **Brackets.** These members are framed through the main girders (Photo 2). Some of the connections occur in the tension areas of the main girders. The bracket members are wide flange steel beams which support the exterior sub-stringers. The bracket connection minimizes out-of-plane web distortions in the main girders. If there is any cracking at these locations, it would first appear in the girder web at the edge of the bracket connections. Monitor the edges of the connection for cracking in the main girder web. In the short spans the longitudinal stiffener passes through the bracket connection.



Typical Bracket Framed through Main Girder (2)

- ! **Tension areas of main girders.** The tension areas of these girders should be carefully inspected, and any defects or section loss should be measured and compared to descriptions of defects and section losses that were documented in previous inspections. See Figure 1 in the Inspection and Maintenance Program section of this manual for tension areas of main girders.
- ! **Transverse and longitudinal stiffener welds.** Inspectors should locate and identify butt welds in the longitudinal stiffeners. The ends of longitudinal stiffeners terminate in tension zones. The weld at the end of each longitudinal stiffener should be checked for cracking.
- ! **Flange and web splices.**
- ! **Small web gaps at stiffeners.**

Other

- ! **Modular expansion joints.** Closely monitor condition of these joints, which are more complicated than other joints.

- !** **Bearings.** Inspect the bearing assemblies at the piers for signs of wear or cracks. Inspect to ensure they are free to move as intended.

Maintenance Recommendations***Regularly Scheduled Maintenance Items***

Recommendation	Schedule
Clean bridge drainage system components (deck drains and downspouts).	6 to 12 months
Flush modular deck joints and check for leaks.	12 months
Powerwash bridge superstructure.	12 months
Powerwash bearings and pin and hanger assemblies	12 months